

ABSTRACT OF THE DISCLOSURE

Preferred ice-controlling materials have been found to include 1,2-cyclohexanediol, 1,3-cyclohexanedione, 1,4-cyclohexanedione, 1,2-cyclohexandione, 1,4-cyclohexanedimethanol, a mixture of 1,4-cyclohexanediol with one or more of 1,3,5-cyclohexanetriol, 1,3-cyclohexanediol, 1,2-cyclohexanediol, 1,3-cyclohexanedione, 1,4-cyclohexanedione, 1,2-cyclohexandione and 1,4-cyclohexanedimethanol, charged derivatives of the ice-controlling materials that include one or more charged moieties therein, and polymers including one or more of the ice-controlling materials in the chain thereof. Use of these ice-controlling materials in methods of inhibiting growth of ice crystals, including both cryopreservation and industrial applications such as within gas pipelines, is advantageous.